REMARKS

Reconsideration of the application, as presently amended, is respectfully requested. Claims 7 and 37 have been canceled. Claims 2-6, 8-33, 35-36, and 38 have been amended for clarity purposes and not for any reason related to the statutory requirements for patentability. The title of the invention has been amended as suggested in the Office Action.

Claims 1-7, 9-10, 22-26, 28-30, 34-37, and 39-40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,780,670 to Ripley et al. ("Ripley") in view of WO 99/16179 to Moore ("Moore"). Additionally, claims 8, 27, and 38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ripley in view of Moore and further in view of U.S. Patent No. 6,226,509 to Mole et al. ("Mole").

Ripley appears to be directed to mixers for use in a transmitter or a receiver and, more particularly, to a frequency conversion mixer implemented on an integrated circuit. An integrated image reject mixer generates precise quadrature components using matched local-oscillator (LO) path and intermediate frequency (IF) path-resistor capacitor (RC) phase shifting networks. Since the LO signal from a local oscillator has a constant amplitude, a phase detector feedback loop easily maintains an accurate ninety-degree phase difference in the LO path phase shifting network. Phase detector 136 compares the phases of the in-phase LO signal 122 at the output of resistor 220 and the quadrature LO signal 124 at the output of capacitor 240. The phase difference between two LO signals 122 and 124 should be ninety degrees. A feedback control signal 137 from the phase detector 136 adjusts the variable resistors 220, 230 and the switched capacitors 240, 245, 250, 255 to insure that a ninety degree phase difference is maintained.

Applicant respectfully submits that Ripley fails to teach, suggest, or render obvious at least one of the distinguishing features of independent claim 1, namely, a first amplitude detector for determining the amplitude of the output I signal and a second amplitude detector for determining the amplitude of the output Q signal. Additionally, Ripley fails to teach, suggest, or render the feature of claim 1 of means for determining the difference between the amplitudes of the output I and Q signals to produce a tuning signal for tuning the phase shifting network to bring the difference between the amplitudes of the output I and Q signals towards a desired level. In contrast to claim 1, Ripley appears to be directed to determining a phase difference between signals.

The Office Action concedes that Ripley does not teach an amplitude detector for determining an amplitude of the output I and Q signals to produce a tuning signal for tuning the phase shifting network to bring a difference between the amplitudes of the output I and Q signals towards a desired level. Moore has been cited as supplying this deficiency of Ripley.

Moore discloses a phasing receiver that includes an input, first and second mixing means for providing quadrature related low IF frequencies, a polyphase filter having inputs coupled to outputs of the first and second signal mixing means, and signal demodulating means coupled to outputs of the polyphase filter. Moore also discloses means for effecting fine adjustments of the phase and/or amplitudes of signals applied to the inputs of the polyphase filter to compensate for less than optimum image rejection. In Moore, mismatches in component values are reduced by predistorting the amplitude and/or phase of drive signals in order to correct for the frequency dependent errors produced by the mismatches. See Moore, Page 5, lines 13-16. Applicant respectfully submits that Moore does not teach or suggest determining the difference between the amplitude of output I and

Q signals to produce a tuning signal for tuning a phase shifting network to bring the difference between the amplitudes of the output I and Q signals towards a desired level; instead, Moore appears to teach altering the amplitude of the input signals.

Applicant respectfully submits that the cited combination of Ripley and Moore fails to teach, suggest, or render obvious at least one of the distinguishing features of independent claim 1, namely, means for determining the difference between the amplitudes of the output I and Q signals to produce a tuning signal for tuning the phase shifting network to bring the difference between the amplitudes of the output I and Q signals towards a desired level. Applicant respectfully submits that independent claim 1 distinguishes over Ripley in view of Moore and is in condition for allowance. Withdrawal of the rejection of independent claim 1 as unpatentable over Ripley in view of Moore is respectfully requested.

Dependent claims 2-6 and 9-10 depend from and further restrict independent claim 1 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 1, dependent claims 2-6 and 9-10 also distinguish over Ripley in view of Moore and are in condition for allowance. Withdrawal of the rejection of dependent claims 2-6 and 9-10 is respectfully requested.

Independent claim 22 discloses a method of rejecting images in a receiver circuit. The method includes determining the amplitude of the of the output I signal and determining the amplitude of the output Q signal. The method further includes determining the difference between the amplitudes of the output I and Q signals to produce a tuning signal and tuning the phase shifting network using the tuning signal to bring the difference between the amplitudes of the output I and Q signals towards a

desired level. Applicant respectfully submits that, for similar reasons to those stated above with respect to the rejection of independent claim 1 as being unpatentable over Ripley in view of Moore, independent claim 22 distinguishes over Ripley in view of Moore and is in condition for allowance. Withdrawal of the rejection of independent claim 22 is respectfully requested.

Dependent claims 23-26 and 28-30 depend from and further restrict independent claim 22 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 22, dependent claims 23-26 and 28-30 also distinguish over Ripley in view of Moore and are in condition for allowance. Withdrawal of the rejection of dependent claims 23-26 and 28-30 is respectfully requested.

Independent claim 34 discloses a tunable phase shifting network for use in an image reject circuit. Applicant respectfully submits that the combination of Ripley and Moore fails to teach, suggest, or render obvious at least one of the distinguishing features of independent claim 34, namely, wherein the phase shifting network further comprises a tuning input for receiving a tuning signal for adjusting an RC time constant of the phase shifting network, and the tuning signal comprises the difference between amplitudes of the output in-phase (I) signal and the output quadrature (Q) signal. In contrast to the invention as claimed in claim 34 and as noted above, Ripley appears to be directed to determining the phase difference between signals. Furthermore, Moore does not determine the difference between the amplitude of the output I and Q signals, but instead, alters the amplitude of the input signals. Applicant respectfully submits that independent claim 34 distinguishes over the cited combination of Ripley and Moore and is in condition for allowance. Withdrawal of the rejection of independent claim 34 as unpatentable over Ripley and Moore is respectfully requested.

Dependent claims 35-36 depend from and further restrict independent claim 34 in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claim 34, dependent claims 35 and 36 also distinguish over Ripley and Moore and are in condition for allowance. Withdrawal of the rejection of dependent claims 35 and 36 is respectfully requested.

Independent claim 39 discloses a tunable phase shifting network for use in an image reject circuit. Applicant respectfully submits that the cited combination of Ripley and Moore fails to teach, suggest, or render obvious at least one of the distinguishing features of independent claim 39, namely, wherein the phase shifting network further comprises a tuning input for receiving a tuning signal for adjusting an RL time constant of the phase shifting network, and the tuning signal comprises the difference between amplitudes of the output in-phase (I) signal and the output quadrature (Q) signal. In contrast to the invention as claimed in claim 39 and as noted above, Ripley appears to be directed to determining the phase difference between signals. Furthermore, Moore does not determine the difference between the amplitude of the output I and Q signals, but instead, alters the amplitude of the input signals. Applicant respectfully submits that independent claim 39 distinguishes over the cited combination of Ripley and Moore and is in condition for allowance. Withdrawal of the rejection of independent claim 39 as unpatentable over Ripley and Moore is respectfully requested.

Independent claim 40 discloses a tunable phase shifting network for use in an image reject circuit. Applicant respectfully submits that the cited combination of Ripley and Moore fails to teach, suggest, or render obvious at least one of the distinguishing features of independent claim 40, namely, wherein the phase shifting network further comprises a tuning input for receiving a tuning signal for

adjusting an LC time constant of the phase shifting network, wherein the tuning signal comprises the difference between amplitudes of the output in-phase (I) signal and the output quadrature (Q) signal. Therefore, for similar reasons to those stated above with respect to the rejection of independent claims 34 and 39 as being unpatentable over Ripley and Moore, Applicant respectfully submits that independent claim 40 distinguishes over the cited combination of Ripley and Moore and is in condition for allowance. Withdrawal of the rejection of independent claim 40 is respectfully requested.

Dependent claim 8 depends from and further restricts independent claim 1 in a patentable sense. Additionally, dependent claim 27 depends from and further restricts independent claim 22 in a patentable sense. Furthermore, dependent claim 38 depends from and further restricts independent claim 34 in a patentable sense. With respect to the rejections of claims 8, 27, and 38, Applicant respectfully submits that Mole fails to supply the deficiencies noted above of Ripley and Moore. Applicant therefore respectfully submits that claims 8, 27, and 38 distinguish over the cited combination of Ripley, Moore, and Mole for at least the same reasons as those stated above with respect to the rejection of independent claims 1, 22, and 34, respectively. Withdrawal of the rejection of claims 8, 27, and 38 is respectfully requested.

Claims 11-21 and 31-33 stand objected to under 37 CFR 1.175 as being improper because a multiple dependent claim cannot depend from any other multiple dependent claim. Additionally, claims 11-21 and 31-33 have not been examined. Applicant respectfully submits that claims 11-21 and 31-33 have been amended to overcome the Examiner's objections. Furthermore, Applicant respectfully submits that dependent claims 11-21 and 31-33 depend from and further restrict

independent claims 1 and 22, respectively, in a patentable sense. Applicant respectfully submits that, for at least the reasons set forth above with respect to the rejection of independent claims 1 and 22, respectively, dependent claims 11-21 and 31-33 also distinguish over the cited references and are in condition for allowance.

In view of the above, it is believed that this application is in condition for allowance, and such a Notice is respectfully requested.

Respectfully submitted,

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